

## C L A I M S

1. A digital movie information recording medium (10 in FIG. 1) comprising:

5 a data area (DA in FIG. 17) for storing file data (e.g., RTR\_MOV.VRO in FIG. 20) containing digital movie information recorded in a predetermined recording unit; and

10 a management area (DA21 in FIG. 17) for storing navigation data (RTR.IFO or RTR\_VMG in FIG. 20) for managing information stored in said data area,

wherein said management area comprises:

15 a first storage field (e.g., C\_PBI in FIG. 12; M\_VOBI in FIG. 24) for storing an erasion level flag which sets a specific recording unit (e.g., lower cells 3 and 4 in FIG. 39; lower VOB3 and VOB4 in FIG. 49) in said data area in a temporarily erased state.

2. A medium according to claim 1, further comprising

20 a second storage field (C\_PBI in FIG. 16; M\_VOBI in FIG. 24) for storing information (PGC\_N, C\_ID\_N; M\_VOBI\_GI/VOB\_TY/TE) of a recording field (PGC) to which the specific recording unit set with the erasion level flag originally belongs,

25 wherein recording contents of said first and second storage fields (C\_PBI; M\_VOBI) contain information (PGC\_N, C\_ID\_N in FIG. 16; trash PGC information in PRM\_TXTI in FIG. 33; M\_VOBI\_GI in

FIG. 24) required for recovering the specific recording unit (lower cells 3 and 4 in FIG. 39; lower VOB3 and VOB4 in FIG. 49) set in the temporarily erased state to a state before erasion.

5       3. A medium according to claim 1 or 2, wherein the specific recording unit (lower cells 3 and 4 in FIG. 39; lower VOB3 and VOB4 in FIG. 49) set in the temporarily erased state are allowed to be actually erased (step C10 in FIG. 40) on the basis of recording contents of said first storage field (C\_PBI in FIG. 12; M\_VOBI in FIG. 24).

10       4. A medium according to any one of claims 1, 2, and 3, wherein said management area includes trash box information (trash PGC) containing a trash box flag (FIG. 15) which pertains to recording contents of said first and second storage fields (C\_PBI; M\_VOBI), and whether or not the specific recording unit set in the temporarily erased state is present is determined (steps C3 to C7 in FIG. 40) on the basis of contents of 15 the trash box flag.

20       5. A recording method, which records information on a digital information recording medium (10) having a data area (DA) for storing file data (RTR\_MOV.VRO) containing digital movie information in a predetermined recording unit, and a management area (DA21) for storing navigation data (RTR.IFO or RTR\_VMG) for 25 managing information stored in the data area,

comprising the step of:

5        storing an erasion level flag which sets a specific recording unit (lower cells 3 and 4 in FIG. 39) in the data area in a temporarily erased state in a first storage field (C\_PBI in FIG. 12; M\_VOBI in FIG. 24) of the management area (step B21 in FIG. 37).

6. A method according to claim 5, further comprising the steps of

10      15      storing information (PGC\_N, C\_ID\_N; M\_VOBI\_GI) of a recording field (PGC) to which the specific recording unit set with the erasion level flag originally belongs in a second storage field (C\_PBI in FIG. 16; M\_VOBI in FIG. 24) of the management area (step B22 in FIG. 37); and

15      20      recovering the specific recording unit (lower cells 3 and 4 in FIG. 39; lower VOB3 and VOB4 in FIG. 49) set in the temporarily erased state to a state before erasion on the basis of recording contents of the first and second storage fields (C\_PBI; M\_VOBI) (step C9 in FIG. 40).

25      25      30      35      40      45      50      55      60      65      70      75      80      85      90      95      100      105      110      115      120      125      130      135      140      145      150      155      160      165      170      175      180      185      190      195      200      205      210      215      220      225      230      235      240      245      250      255      260      265      270      275      280      285      290      295      300      305      310      315      320      325      330      335      340      345      350      355      360      365      370      375      380      385      390      395      400      405      410      415      420      425      430      435      440      445      450      455      460      465      470      475      480      485      490      495      500      505      510      515      520      525      530      535      540      545      550      555      560      565      570      575      580      585      590      595      600      605      610      615      620      625      630      635      640      645      650      655      660      665      670      675      680      685      690      695      700      705      710      715      720      725      730      735      740      745      750      755      760      765      770      775      780      785      790      795      800      805      810      815      820      825      830      835      840      845      850      855      860      865      870      875      880      885      890      895      900      905      910      915      920      925      930      935      940      945      950      955      960      965      970      975      980      985      990      995      1000      1005      1010      1015      1020      1025      1030      1035      1040      1045      1050      1055      1060      1065      1070      1075      1080      1085      1090      1095      1100      1105      1110      1115      1120      1125      1130      1135      1140      1145      1150      1155      1160      1165      1170      1175      1180      1185      1190      1195      1200      1205      1210      1215      1220      1225      1230      1235      1240      1245      1250      1255      1260      1265      1270      1275      1280      1285      1290      1295      1300      1305      1310      1315      1320      1325      1330      1335      1340      1345      1350      1355      1360      1365      1370      1375      1380      1385      1390      1395      1400      1405      1410      1415      1420      1425      1430      1435      1440      1445      1450      1455      1460      1465      1470      1475      1480      1485      1490      1495      1500      1505      1510      1515      1520      1525      1530      1535      1540      1545      1550      1555      1560      1565      1570      1575      1580      1585      1590      1595      1600      1605      1610      1615      1620      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2625      2630      2635      2640      2645      2650      2655      2660      2665      2670      2675      2680      2685      2690      2695      2700      2705      2710      2715      2720      2725      2730      2735      2740      2745      2750      2755      2760      2765      2770      2775      2780      2785      2790      2795      2800      2805      2810      2815      2820      2825      2830      2835      2840      2845      2850      2855      2860      2865      2870      2875      2880      2885      2890      2895      2900      2905      2910      2915      2920      2925      2930      2935      2940      2945      2950      2955      2960      2965      2970      2975      2980      2985      2990      2995      3000      3005      3010      3015      3020      3025      3030      3035      3040      3045      3050      3055      3060      3065      3070      3075      3080      3085      3090      3095      3100      3105      3110      3115      3120      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5625      5630      5635      5640      5645      5650      5655      5660      5665      5670      5675      5680      5685      5690      5695      5700      5705      5710      5715      5720      5725      5730      5735      5740      5745      5750      5755      5760      5765      5770      5775      5780      5785      5790      5795      5800      5805      5810      5815      5820      5825      5830      5835      5840      5845      5850      5855      5860      5865      5870      5875      5880      5885      5890      5895      5900      5905      5910      5915      5920      5925      5930      5935      5940      5945      5950      5955      5960      5965      5970      5975      5980      5985      5990      5995      6000      6005      6010      6015      6020      6025      6030      6035      6040      6045      6050      6055      6060      6065      6070      6075      6080      6085      6090      6095      6100      6105      6110      6115      6120      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6625      6630      6635      6640      6645      6650      6655      6660      6665      6670      6675      6680      6685      6690      6695      6700      6705      6710      6715      6720      6725      6730      6735      6740      6745      6750      6755      6760      6765      6770      6775      6780      6785      6790      6795      6800      6805      6810      6815      6820      6825      6830      6835      6840      6845      6850      6855      6860      6865      6870      6875      6880      6885      6890      6895      6900      6905      6910      6915      6920      6925      6930      6935      6940      6945      6950      6955      6960      6965      6970      6975      6980      6985      6990      6995      7000      7005      7010      7015      7020      7025      7030      7035      7040      7045      7050      7055      7060      7065      7070      7075      7080      7085      7090      7095      7100      7105      7110      7115      7120      7125      7130      7135      7140      7145      7150      7155      7160      7165      7170      7175      7180      7185      7190      7195      7200      7205      7210      7215      7220      7225      7230      7235      7240      7245      7250      7255      7260      7265      7270      7275      7280      7285      7290      7295      7300      7305      7310      7315      7320      7325      7330      7335      7340      7345      7350      7355      7360      7365      7370      7375      7380      7385      7390      7395      7400      7405      7410      7415      7420      7425      7430      7435      7440      7445      7450      7455      7460      7465      7470      7475      7480      7485      7490      7495      7500      7505      7510      7515      7520      7525      7530      7535      7540      7545      7550      7555      7560      7565      7570      7575      7580      7585      7590      7595      7600      7605      7610      7615      7620      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8. A method according to any one of claims 5, 6, and 7, further comprising the step of creating trash box information (trash PGC) containing a trash box flag (FIG. 15) which pertains to recording contents of the 5 first and second storage fields (C\_PBI; M\_VOBI) (step B3 in FIG. 36).

9. A playback method, which extracts recording information from a digital information recording medium (10) having a data area (DA) for storing file data (RTR\_MOV.VRO) containing digital movie information in a predetermined recording unit, and a management area (DA21) for storing navigation data (RTR.IFO or RTR\_VMG) for managing information stored in the data area, comprising the steps of:

15 extracting an erasion level flag which sets a specific recording unit (lower cells 3 and 4 in FIG. 39; lower VOB3 and VOB4 in FIG. 49) in the data area in a temporarily erased state from a predetermined field (C\_PBI in FIG. 12; M\_VOBI in FIG. 24) of the 20 management area (step E5 in FIG. 44); and

skipping playback of the specific recording unit (lower cells 3 and 4 in FIG. 39; lower VOB3 and VOB4 in FIG. 49) set with the erasion level flag when the erasion level flag is set in the temporarily erased 25 state (YES in step E10 in FIG. 44).

10. A method according to claim 9, further comprising:

when the predetermined field (C\_PBI; M\_VOBI) of the management area contains trash information (trash PGC) that pertains to the temporarily erased state of recording contents,

5 the display step (steps C3 to C7 in FIG. 40) of making a display that reveals contents of the specific recording unit in the temporarily erased state on the basis of contents of the trash box information (trash PGC).

10 11. A method according to claim 10, further comprising the step of presenting a trash box mark indicating that information set in the temporarily erased state is recorded on the medium before the display step is executed (step C2 in FIG. 40).

15 12. A recording method for recording an object comprised of a set of cells, and management information used for playing back the object on a recording medium which has a data area for storing the object and a management area for storing the management information, 20 comprising the steps of:

setting (B5-B10 in FIG. 36) an appending range of erasion level information for designating with respect to one or more specific cells of the object whether playback is permitted or inhibited;

25 setting (B11-B20 in FIGS. 36-37) a divided cell, when a terminal portion of the erasion level information appending range does not match a cell unit of a

current cell, by dividing the current cell of the mismatch; and

5 changing (B21-B24 in FIG. 37) the management information for playing back the divided cell and current cell in accordance with contents of the cell division, and appending the erasion level information to the management information of the divided cell which belongs to the erasion level information appending range.

10 13. A recording apparatus for recording an object comprised of a set of cells, and management information used for playing back the object on a recording medium which has a data area for storing the object and a management area for storing the management information, comprising:

15 erasion level appending setting means for setting an appending range of erasion level information for designating with respect to one or more specific cells of the object whether playback is permitted or inhibited;

20 cell division means for setting a divided cell, when a terminal portion of the erasion level information appending range does not match a cell unit of a current cell, by dividing the current cell of the mismatch; and

25 new management information re-creating means for re-creating the management information for playing back

the divided cell and current cell in accordance with contents of the cell division, and appending the erosion level information to the management information of the divided cell which belongs to the erosion level information appending range.

5                   14. An apparatus for playing back recording information from a recording medium which has a data area that records an object comprised of a set of cells, and a management area that records management information used for playing back the object, comprising:

10                   cell unit display means for displaying a desired object in a predetermined cell unit on the basis of the management information played back from the medium;

15                   erasure level appending range setting means for setting an appending range of erasure level information for designating whether playback is permitted or prohibited, in a unit not larger than the cell unit displayed by said cell unit display means; and

20                   means for, when the erasure level information appending range set by said erasure level appending range setting means is determined and a current cell is consequently divided, displaying a cell unit of the object using a sequence of new divided cell units.

25                   15. A recording method for recording an object (VOB) and management information used for playing back the object on a recording medium which has a data area for storing the object and a management area for

storing the management information, comprising the steps of:

5 setting (ST100-ST110 in FIG. 45) an appending range (upper illustration of VOB2, VOB3 in FIG. 49) of erasion level information (protect flag at ST134 in FIG. 46) for designating with respect to one or more specific objects (lower illustration of VOB3, VOB4 in FIG. 49) whether playback is permitted or inhibited;

10 setting (ST112-ST132 in FIGS. 45-46) a divided object, when a terminal portion of the erasion level information appending range (upper illustration of VOB2-VOB3 in FIG. 49) does not match a unit of a current object (upper VOB2 or upper VOB3 in FIG. 49), by dividing the current object (upper VOB2 or upper VOB3 in FIG. 49) of the mismatch; and

15 changing (ST130 in FIG. 46) the management information (VOBI) for playing back the divided object and current object in accordance with contents of the object division, and appending (ST134 in FIG. 46) the erasion level information (protect flag) to the management information (VOBI) of the divided object (lower VOB3 or lower VOB4 in FIG. 49) which belongs to the erasion level information appending range (lower VOB2-VOB5 in FIG. 49).

20 16. An apparatus for recording and playing back video information from a recording medium, comprising:  
25 a temporary erased portion specifying portion (MPU

30 in FIG. 34; E3-E7 in FIG. 44) for specifying a temporarily erased portion (CELL3-CELL4 in the lower illustration of FIG. 12; or VOB3-VOB4 in the lower illustration of FIG. 49);

5 a temporary erased portion detecting portion (MPU 30 in FIG. 34; E10 in FIG. 44) for detecting only a unit of reproduction of the temporarily erased portion (CELL3-CELL4 in the lower illustration of FIG. 12; or VOB3-VOB4 in the lower illustration of FIG. 49) according to the specifying of said temporary erased portion specifying portion;

10 a temporary erased portion indicating portion (MPU 30 in FIG. 34; E11, E18 in FIG. 44) for indicating said unit of reproduction of the temporarily erased portion 15 (CELL3-CELL4 in the lower illustration of FIG. 12; or VOB3-VOB4 in the lower illustration of FIG. 49), thereby said apparatus being able to reproduce the indicated unit of reproduction.